
The Impact of Demographic Factors on Risk Tolerance Level of Individual Investors in Kurunegala District

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Abstract

Humans are unique from each other based on the demographical characteristics they possess. The inspiration to find the uniqueness in investment decisions in relation to the risk tolerance level of investors who owned different demographical characteristics have incited the researcher to investigate. Basically, the objective of the study is to identify whether there is an impact of demographic characteristics on the risk tolerance level of individual investors. Investors in Kurunegala District is the population of the study and in 2018 the investors above the age of 19 was 1,331,705 approximately. The researcher has used both ordinary cluster sampling method and simple random sampling technique to design the sample. Correlation and regression tests are used to explore the outcome of the collected data set and the findings have revealed that demographic factors have a significant impact on the risk tolerance level of individual investors, but demographic factors such as gender, occupation, civil status and family size do not have a significant impact on the risk tolerance level of individual investors. Risk tolerance level of investors is a prompt concept of investment by which the decisions of investors are directed.

Keywords: Demographic Factors, Impact, Risk Tolerance Index

1. Introduction

Each and every investor chooses to employ funds as per their wishes. Accordingly, each and every aspect of investors' investment decisions depends on many factors. Generally, the subject of investment dominantly explains the concepts of expected return on particular investment decision with its desultory risk level. Thus, the previous studies have explained the investment behavior of investors through the concepts of return and risks or financial constraints (Love & Zicchino, 2006). Love and Zicchino (2006), have also indicated the attempt of past scholars who described that the investors possess a rational behavior in

decision making process and the fault of that assumption. Today it is believed that investors possess an irrational behavior in decision making along with the risk tolerance level of each investor (Islamoglu et al., 2015). Moreover, humans are unique from each other based on the demographical characteristics and psychographic factors they possess (Rushdi & Jaiwal, 2014). Hence, there is no doubt that investors also have a unique nature similar to the demographic factors and psychographic traits. As per the researchers' knowledge, if the risk tolerance levels of two investors facing the same circumstances have been analyzed, the outcome might change as those investors are unique from each other in terms of demographic and psychographic characteristics. This inspiration has incited the researcher to find whether the demographic factors of investors tend to have a significant impact on risk tolerance level. The scale introduced by Grable and Lytton (1999) is used to measure the risk tolerance level of individual investors. This paper consists of a brief description of the identified problem while providing a literature base to the current research area. It further provides the results and discussion of data analysis after highlighting the methodology implemented and finally a conclusion of all the findings has been provided for the better understanding of the thesis to the reader.

1.1. Problem Statement

The impact of demographic factors on risk tolerance level of individual investors is the problem of the study. This problem has arisen due to the complexity of understanding desultory risk capacities of investors especially of financial institutes. Apart from other factors, demographic factors exhibit major inherent features of individual investors. Therefore, the current study has been conducted to find answers whether and to what extent demographic factors such as age, gender, civil status, occupation, income level, educational qualification, investment experience and family size have an impact on risk tolerance level of individual investors which could assist in addressing the complexity of understanding desultory risk capacities of each and every individual investor. The researcher has also suggested to answers to the contradictory findings of the empirical studies.

2. Literature Review

2.1. Age

Life Cycle Investment theory asserts that investors can afford to take risk when they are younger because if they face losses younger generation has the ability to overcome them by working longer and harder. Wang and Hanna (1997) tested this theory and found a contradictory idea showing that relative risk aversion decreases as people age since young people may appear more risk averse as it is hard for them to endure any short-term

investment losses with limited financial resources, but agreeing to the life cycle investment theory, Semolo (2010); Chavali and Mohanraj (2016) have found that age and risk behavior are related as younger investors want to accumulate wealth for their long future life with high expected returns while elders prefer to have more comfortable life with stable returns.

2.2. Gender

Some empirical evidences indicate that women are more risk averse than men (Sapienza, Zingales & Maestriperi, 2009; Watson & McNaughton, 2007; Hira & Loibl, 2006; Faff, Hallahan & McKenzie, 2011; Semolo, 2010). Contradictory to this finding some researchers have found that there is no relation between gender and risk tolerance level of investors (Jain & Mandot, 2012; Sulaiman, 2012; Subramaniam & Athiyaman, 2016; Sadiq & Ishaq, 2014). Apart from that, when Rajalakshumi and Manivannan (2017) have shown that gender has an association with savings besides, Wubie et al. (2015) have shown a positive relation of gender towards saving and investment decisions while revealing that male teachers have a better saving and investment habit than female teachers.

2.3. Civil Status

When people marry, have children or separate through divorce or widowhood, they experience unexpected changes in their financial position (Rana, 2017). Accordingly, Sulaiman (2012) has stated that there is an association between civil status and risk tolerance level of investors. More clearly stated, there is a negative correlation between civil status and level of risk tolerance of investors (Jain & Mandot, 2012). As per the study conducted by Semolo (2010) single investors tend to take higher risk than married ones, but Subramaniam and Athiyaman (2016); Sadiq and Ishaq (2014) have failed to identify an association between civil status and risk tolerance level of investors. Besides, Friedberg and Webb (2006) have stated that households tend to invest more heavily in equities when husbands have more decision making power.

2.4. Occupation

While Geetha and Ramesh (2012) have failed to identify a significant association between occupation and investment decisions, Wubie et al. (2015) have stated that occupation is negatively correlated with saving and investment decisions. According to Chavali and Mohanraj (2016), occupation has a significant relation with risk tolerance level (Anzari & Phatak, 2017) and Jain and Mandot (2012) have further identified that occupation and risk tolerance are negatively correlated, but contradictory conclusions have also been given in

empirical findings by showing that occupation and risk tolerance are not correlated (Subramaniam and Athiyaman, 2016; Sadiq and Ishaq, 2014).

2.5. Income Level

Anzari and Phatak (2017); Grable J. E (2000) have found an association between income level and risk tolerance level while a positive correlation has been identified by Jain and Mandot (2012); Subramaniam and Athiyaman (2016); Sadiq and Ishaq (2014); Sulaiman (2012). Accordingly, Semolo (2010) has stated that low income investors tend to be more risk averse, while wealthier investors tend to be risk seekers and this implies that income may affect investor's risk behavior. Apart from that, Patel and Modi (2017); Chavali and Mohanraj (2016) have identified that income level has an impact on investment decisions.

2.6. Educational Qualification

When identifying the correlation of educational qualification and risk tolerance level, studies have shown contradictory results. While Subramaniam and Athiyaman (2016); Sadiq and Ishaq (2014) have shown a positive correlation, Jain and Mandot (2012) found a negative correlation between educational qualification and risk tolerance level. Moreover, Sulaiman (2012); Anzari and Phatak (2017) have only stated that educational qualification and risk tolerance level are associated.

2.7. Investment Experience

Along with the assistance of a limited number of empirical findings which have adopted the variable of investment experience, researchers have found a positive correlation between investment experience and risk tolerance level of individual investors (Subramaniam & Athiyaman, 2016; Sadiq & Ishaq, 2014) which implies a direct impact of investment experience on the risk tolerance level of investors.

2.8. Family Size

If the dependents of a family are small, those families tend to take more risk levels than investors who possess a big family due to the bigger burden assumed by those big family investors. Hence, family size and risk tolerance level have a significant negative correlation (Sulaiman, 2012). If dependents of family is high those investors avoid investing their money in more volatile markets (Semolo, 2010), but if the number of employed family members increase in the household, savings and investments also increase (Wubie et al., 2015; Rajalakshumi & Manivannan, 2017). Apart from these findings, Sadiq and Ishaq (2014) have

failed to identify a significant relation between family size and risk tolerance level of investors.

3. Methodology

The study aimed at exploring the impact of demographic factors on the risk tolerance level of individual investors in Kurunegala District. Mainly eight demographic factors including *age, gender, civil status, occupation, income level, educational qualification, investment experience and family size* have been selected for the purpose of analysis. The findings of the current study are presented using the analysis results of Pearson correlation as used by prior researchers and mainly the present researcher has used linear regression to find the real impact of demographic factors on risk tolerance level while validity and reliability tests and descriptive statistics are also performed using the statistical package of SPSS. Following regression model is used to find out the impact of demographic factors on risk tolerance level of investors.

$$RT = \alpha_0 + \beta_1AG + \beta_2GE + \beta_3CS + \beta_4OCC + \beta_5IL + \beta_6EQ + \beta_7IE + \beta_8FS + e$$

Where, RT= Risk Tolerance, α =Constant, AG=Age, GE=Gender, CS=Civil Status, OCC=Occupation, IL=Income Level, EQ=Educational Qualification, IE=Investment Experience, FS=Family Size

The researcher has divided the population into five clusters, using the ordinary cluster sampling method such as government sector investors, professional investors, school children, undergraduates and self-employed people. In the 2nd stage of sampling design the researcher has used simple random sampling method to select sample subjects from each cluster and a sample size of 100 individual investors is decided by selecting 20 investors from each. The study uses primary data and questionnaire method to collect the data from the selected sample of respondents in Kurunegala district while prior studies are used to prepare a strong literature base to the current study. Part A of the questionnaire consists of questions regarding the selected eight demographic factors and part B consists 20 questions prepared by Grable and Lytton (1999) to measure the risk tolerance level of investors.

3.1. Hypothesis of the Study

H₁: There is a significant impact of demographic factors on risk tolerance level of individual investors.

4. Data Analysis

As per the Table 1, the sample profile consists of 48% females and 52% males from the entire respondents. The married respondents are 46% while the unmarried respondents comprise 54%. Mainly, the sample preparation is done based on the occupation of the respondents. Thus, each selected occupation comprises 20% of respondents making a total of 100%. A major portion of respondents of 53% falls under the category of below Rs 150,000 per annum and only 6% represents a higher income level which is above Rs 1,000,000 per annum. A majority of 55% of the respondents have only the qualification of advanced level while only 3 respondents have the qualification of post graduate. Only 9% has an investment experience of above 15 years while 32% has an experience from 5 to 10 years. Many respondents have 3 to 4 members in the family and 23% has more than 4 members. A major portion of 52% from the sample is comprised by the age group of 19-29 while senior citizens have a percentage of 14 from the total sample.

Table 1: Sample Profile

Demographic Factors		Number of respondents	Percentage
Total number of respondents		100	100%
Age	1=19-29	52	52%
	2=30-40	18	18%
	3=41-50	16	16%
	4=51-60	10	10%
	5=61 or more	04	04%
Gender	1= Female	48	48%
	2= Male	52	52%
Civil status	1= Married	46	46%
	2= Unmarried	54	54%
Occupation	1= School Children	20	20%
	2= Government	20	20%
	3= Professional Investors	20	20%
	4= Undergraduates	20	20%
	5= Self Employed	20	20%
Income Level (per annum)	Bellow Rs 150,000	53	53%
	Rs 150,000-Rs 300,000	15	15%
	Rs 300,000-Rs 500,000	13	13%
	Rs 500,000-1,000,000	13	13%

	Rs 1,000,000 or above	6	6%
Educational Qualification	1= O/L	8	8%
	2= A/L	55	55%
	3= Undergraduates	20	20%
	4= Graduates	14	14%
	5= Post Graduates	3	3%
Investment Experience	Up to 5 years	54	54%
	5-10 years	32	32%
	10-15 years	9	9%
	15 years or more	5	5%
Family Size	1= one member	4	4%
	2= two members	14	14%
	3= three to four members	59	59%
	4= more than four members	23	23%

Source: Compiled from the survey data (2019)

4.1. Validity

Mainly, the validity of the questions has been ensured by the reaction of respondents on their face. To test the construct validity, factor analysis has been done by KMO and Bartlett's tests.

Table 02: KMO and Bartlett's

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.751
Bartlett's Test of Sphericity Sig. Value	0.000

Source: Compiled from the survey data (2019)

Ensuring the sampling adequacy of the compiled survey data, KMO value shows 0.751 ($0 > 0.751 < 1$) score level and the significance value of Bartlett's test of sphericity is 0 ($0 < 0.05$) which represents the validity and suitability of the responses collected.

4.2. Reliability Test

The reliability test results shown by the cronbach's alpha score is a measure of internal consistency which shows how closely the items of a group are related. The researcher has

performed the reliability test and table 3 shows a summary of reliability statistics for the 20 measurement items of risk tolerance capacity.

Table 3: Reliability Statistics

Variable	Cronbach's Alpha	Number of Items
Risk Tolerance Level	0.865	20

Source: Compiled from the survey data (2019)

The Cronbach's alpha score should be located in the range of 0.7 to 1.0, ranking from acceptable level to excellent score level. As per the results shown by the above table, the aggregate value of Cronbach's score for the 20 items is 0.865 ($0.7 > 0.865 < 1$) which is considered as a good scoring showing the internal consistency of the dependent variable.

4.3. Descriptive Statistics

Descriptive statistics shows the basic nature of research variables. The table 4 shows the results of descriptive statistics for the 20 items of risk tolerance.

Table4: Descriptive Statistics

	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Std. Error
RT1	2.25	.770	-.194	.241
RT2	2.87	1.022	-.372	.241
RT3	2.52	.858	-.650	.241
RT4	2.11	.751	-.184	.241
RT5	1.68	.931	.685	.241
RT6	2.12	.656	-.128	.241
RT7	2.08	.861	.038	.241
RT8	2.38	.663	1.090	.241
RT9	2.46	.501	.163	.241
RT10	1.88	.988	.245	.241
RT11	2.31	.837	-.641	.241
RT12	2.07	.902	.704	.241
RT13	1.78	.786	.412	.241
RT14	2.79	1.140	-.411	.241

RT15	2.22	.675	.506	.241
RT16	1.94	1.003	.122	.241
RT17	1.84	.992	.329	.241
RT18	2.32	1.213	.258	.241
RT19	1.67	.829	.687	.241
RT20	2.06	.827	.106	.241
Risk Tolerance	2.1675	0.46473	.740	.241
Average Index	43.35			

Source: Compiled from the survey data (2019)

The mean values of all 20 measurement items of risk tolerance capacity have fallen under the range from 1.67 to 2.87. The sum of mean values of the 20 items is 43.35 and this value is the average index value which shows the average risk tolerance score of respondents. The standard deviation of the risk tolerance level has taken a value of 0.46473 showing that the deviation of mean value is not intensive ($SD < 1$). The standard error of the data set is 0.241 which gives an indication that the mean of the sample is relatively close to the true mean of the overall population ($SE < 1$). The data are positively skewed.

4.4. Correlation Analysis

Table 5: Correlation Statistics

		AG	GE	CS	OCC	IL	EQ	IE	FS
RT	Pearson Correlation	-.004	.389**	.015	-.136	.629**	.437**	.458**	-.050
	Sig. (2- tailed)	.967	.000	.879	.177	.000	.000	.000	.625

** Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled from the survey data (2019)

Correlation analysis is done to test the strength of the relationship between two variables. As per the table 5, gender, income level, educational qualification and investment experience are positively correlated with risk tolerance level of investors at a significance value of 0.000 ($P < 0.01$). According to the Pearson value of correlation, civil status and risk tolerance level have a positive correlation which is insignificant at 0.879 ($P > 0.01$ or 0.05). As per the

compiled correlation matrix, age, occupation and family size have a negative correlation coefficient value (AG=-0.04, OCC=-0.136, FS=-.050) which tends to be insignificant ($P > 0.01$ or 0.05).

4.5. Regression Analysis

Regression analysis is used to measure the impact of independent variables on the dependent variable. The researcher has built the following model to run the regression analysis and table 6 shows the model fit as 56.2% while Durbin Watson value of 1.555 shows a positive autocorrelation that tells no autocorrelation has been detected in the sample.

Table 6: Regression Statistics

R=0.773		R2=0.598		Adjusted R2=0.562	Std. Error of the Estimate=0.307	Durbin Watson1.555
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.705	.274		6.220	.000
	Age	-.175	.050	-.453	-3.474	.001
	Gender	.095	.068	.102	1.392	.167
	Civil Status	.056	.081	.060	.689	.493
	Occupation	-.039	.024	-.120	-1.647	.103
	Income Level	.119	.036	.337	3.304	.001
	Educational Qualification	.087	.039	.176	2.214	.029
	Investment Experience	.292	.070	.531	4.180	.000
	Family Size	-.083	.050	-.130	-1.669	.099

Dependent Variable: Risk Tolerance

Source: Compiled from the survey data (2019)

According to the table 6, income level, educational qualification and investment experience show a significant positive impact on risk tolerance level of investors ($P < 0.05$). As per the beta coefficient value of age and risk tolerance level, an increase in per unit of age tends to decrease the risk tolerance level of investors by 0.175 ($P < 0.05$). Gender and civil status have an insignificant positive impact on risk tolerance level while family size and occupation reveal an insignificant negative impact ($P > 0.05$). The impact of independent variables on the dependent has been shown by the beta coefficient values as follows.

$$RT = \alpha_0 + \beta_1AG + \beta_2GE + \beta_3MS + \beta_4OCC + \beta_5IL + \beta_6EQ + \beta_7IE + \beta_8FS + e$$

$$RT = \alpha_0 + -0.175AG + 0.095GE + 0.056MS + -0.039OCC + 0.119IL + 0.087EQ + 0.292IE + -0.083FS + e$$

5. Discussion

H₁: There is a significant impact of demographic factors on risk tolerance level of individual investors

The findings of the current study have revealed that demographic factors have an impact on the risk tolerance level of investors. Demographic characteristics such as income level, educational qualification and investment experience have a positive significant correlation with the risk tolerance capacity of individual investors while confirming the findings of Subramaniam and Athiyaman (2016); Jain and Mandot (2012); Sadiq and Ishaq (2014). But the current research have found a positive significant impact of those variables on risk tolerance level by regression tools. Occupation, family size and civil status have no significant relationship with risk tolerance level of investors agreeing to the findings of Subramaniam and Athiyaman (2016); Sadiq and Ishaq (2014). The current study have also found that there is no any impact of these variables. The regression tools have revealed a negative significant impact of age on the risk tolerance level of investors under 5% significance level. This finding supports the life cycle investment theory of investors. Despite the fact that Sadiq and Ishaq (2014) found that there is no effect of gender on risk tolerance during financial decisions the current study reveals a positive insignificant impact of gender on the risk tolerance level of investors under 5% significance level.

6. Conclusion

Financial risk tolerance level is considered as a necessary requirement in understanding the behavior of investors. The main objective of the research is to identify whether there is a significant impact of demographic factors on risk tolerance level of individual investors in Kurunegala District. The researcher has selected eight demographic characteristics (*age, gender, civil status, occupation, income level, educational qualification, investment experience and family size*) collected from the intensive study of past research. The findings have revealed that demographic factors have an impact on risk tolerance level of individual investors. Investors' income level, educational qualifications and investment experience have a positive significant impact on risk tolerance capacity of investors while age has shown a negative significant impact revealing that the young investors have a sense of accepting more

risk level than the older. Demographic characteristics such as gender, occupation, civil status and family size have no significant impact on the risk tolerance level of individual investors.

Risk tolerance level is one of the domain factors which influences and controls the mindset of investors to choose between investment avenues. Thus risk tolerance capacity is more beneficial to understand the investment behavior of investors for financial service providers as it serves as a base for making particular financial products for particular investor segments. Future reserach can be implemented in the area of behavioral finance by identifying the impact of psychological traits on risk tolerance level of investors.

References

- Anzari, S., & Phatak, Y. (2017). A Study of Effect of Demographic Characteristics on Financial Risk Tolerance of Individual Investors. *International Journal of Management Studies*, 4(3), 118-128.
- Chavali, K., & Mohanraj, P. (2016). Impact of Demographic Variables and Risk Tolerance on Investment Decisions. *International Journal of Economics and Financial Issues*, 6(1), 169-175.
- Faff, R., Hallahan, T., & McKenzie, M. (2011). Women and risk tolerance in an aging world. *International Journal of Accounting and Information Management*, 19(2), 100-117.
- Geetha, N., & Ramesh, M. (2012). A study of relevance of demographic factors in investment decisions. *Perspectives of Innovations, Economics & Business*, 10(1), 14-27.
- Grable, J. E. (2000). Financial Risk Tolerance and Additional Factors That Affect Risk Taking in Everyday Money Matters. *Journal of Business and Psychology*, 14(4), 625-630.
- Grable, J., & Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review*, 163-181.
- Hira, T., & Loibl, C. (2006). *Gender Differences in Investment Behavior*. NASD Investor Education Foundation.
- Islamoğlu, M., Apan, M., & Ayvali, A. (2015). Determination of Factors Affecting Individual Investor Behaviours: A Study on Bankers. *International Journal of Economics and Financial Issues*, 5(2), 531-543.

- Jain, D., & Mandot, N. (2012). Impact of Demographic Factors on Investment Decision of Investors in Rajasthan. *International Refereed Research Journal*, 3(2(3)), 81-92.
- Joyce K.H , N., & Yien, L. (2013). The influence of personality trait and demographics on financial decision making among Generation Y. *Emerald Group Publishing Limited*, 14(3), 230-243.
- Love , I., & Zicchino, L. (2006). Financial Development and Dynamic Investment Behavior: Evidence From Panel VAR. *The Quarterly Review of Economics and Finance*, 46, 190-210.
- Rajalakshumi, C., & Manivannan, L. (2017). A Study on Influence of Investors' Demographic Characteristics on Investment Pattern. *International Journal of Innovative Research in Management Studies*, 2(2), 16-20.
- Rana, S. (2017). Marital Status and Investment Preferences. *Online International Interdisciplinary Research Journal*, 7, 91-98.
- Rushdi, N., & Jaiwal, B. (2014). Impact of Psychological Influences on Investment Behavior of Salaried Investors in India. *University of Lucknow*, 1-35.
- Sadiq, M., & Ishaq, H. (2014). TheEffect of Demographic Factors on the Behavior of Investors during the Choice of Investment: Evidence from. *Global Journal of Management and Business Research: C*, 14(3), 47-56.
- Sapienza, P., Zingales, L., & Maestripieri, D. (2009). Gender differences in financial risk aversion and career choices are affected by testosterone. *Economic Sciences*, 106(36), 15268–15273.
- Semolo, J. (2010). The Relationship Between Demographic Factors and Investment Decision in Surabaya. *Journal of Economics, Business and Accountancy Ventura*, 13(3), 213-224.
- Subramaniam, V., & Athiyaman, T. (2016). The effect of demographic factors on investor's risk tolerance. *International Journal of Commerce and Management Research*, 2(3), 136-142.
- Sulaiman, E. (2012). An Emperical Analysis of Financial Risk Tolerance and Demographic Features of Individual Investors. *2nd annual international conference on accounting and finance(2012).2*, pp. 109-115. Kerala: Procedia Economics and Finance.

- Wang, H., & Hanna, S. (1997). Does Risk Tolerance Decrease With Age? *Financial Counseling and Planning*, 8(2), 27-32.
- Watson, J., & McNaughton, M. (2007). Gender Differences in Risk Aversion and Expected Retirement Benefits. *Financial Analysts Journal*, 63(4), 52-62.
- Wubie, A., Dibabe, T., & Wondmagegn, G. (2015). The Influence of Demographic Factors on Saving and Investment Decision of High School Teachers in Ethiopia:A Case Study on Dangila Woreda. *Research Journal of Finance and Accounting*, 6(9), 64-68.